

DoD Global Influenza Surveillance Program: *Influenza Surveillance at AFIOH*

Overall Lab Surveillance

Total Specimens Collected

- Collected in Week 17: 28
- Season Total: 3,328

Total Influenza Isolates

Includes subtyped isolates

- Influenza A: 442
- Influenza B: 219

Total Isolates Subtyped

- A/H1N1: 42
- A/H3N2: 254
- B/HongKong: 58
- B/Shanghai: 11

Sentinel Site Lab Surveillance

Sentinel Specimens Collected

- Collected in Week 17: 9
- Season Total: 1,642

Sentinel Influenza Isolates

Includes subtyped isolates

- Influenza A: 308
- Influenza B: 97

Sentinel Isolates Subtyped

- A/H1N1: 35
- A/H3N2: 191
- B/Hong Kong: 34
- B/Shanghai: 7

Overseas Research Lab Surveillance

Research Specimens Collected

- Collected in Week 17: 18
- Season Total: 928

Research Influenza Isolates

Includes subtyped isolates

- Influenza A: 28
- Influenza B: 103

Research Isolates Subtyped

- A/H1N1: 1
- A/H3N2: 6
- B/Hong Kong: 21
- B/Shanghai: 4

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Week 17

23-29 April 2006

Current WHO Phase of Pandemic Alert: **PHASE 3** (Source: [WHO](#))

Influenza (02 Oct - Present)

661 influenza isolates

442 Influenza A; 219 Influenza B

21% of completed specimens were positive for an influenza virus: 14% influenza A; 7% influenza B.

Influenza A

A (H1N1): 42

A (H3N2): 254

Un-subtyped: 146

Influenza B

B (Hong Kong): 58

B (Shanghai): 11

Un-subtyped: 150

Locations of identified influenza viruses



Click [here](#) for an **animated map** of isolates (and subtypes) by month.

Vaccination Status

97% of the Active Duty Air Force, 94% of Air National Guard, and 84% of Air Force Reserve are currently vaccinated (as of 17 Apr 06). (Data gathered by MILVAX)

Update: Human Avian Influenza (H5N1)

- **Egypt:** MoH announced country's 13th case of human H5N1. Testing performed at both the US Naval Medical Research Unit-3 and the national public health lab produced positive results. Patient is a 27-yr-old female from Cairo, was hospitalized on 01 May with bilateral pneumonia, and is in stable condition. Her infection has been linked with diseased poultry during a visit to the Minufiyah governorate. See [WHO update](#).
- See pg 6 for list of cumulative cases from WHO. Also, see [WHO's situational update](#) for a detailed update.

Influenza Outbreaks / News

At this time, AFIOH has not been notified of influenza outbreaks at any of the MTFs.

AFIOH Report Overview

This report summarizes the status of all respiratory viral cultures processed at the AFIOH laboratory, which includes specimens collected from DoD beneficiaries at 43 tri-service sentinel sites and non-sentinel sites, as well as from foreign nationals through DoD overseas research laboratories (Armed Forces Institute of Medical Sciences [AFRIMS], the Naval Medical Research Center Detachment [NMRC-D], and the US Army Center for Health Promotion and Preventive Medicine West [CHPPM-W]).

Overall Laboratory Surveillance

Week 17 overview. At this time, 11 sites (5 sentinel and 4 non-sentinel) have shipped 28 specimens that were collected from patients during Week 17. See map to right. Of the specimens with completed results, 75% (n=3) were positive for influenza (1 influenza A and 2 influenza B).

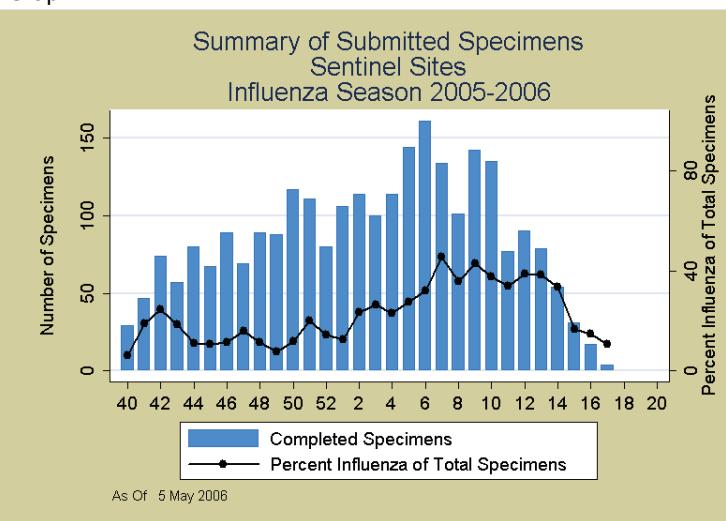
Season overview. Since 02 October 2005, 77 sites (38 sentinel, 35 non-sentinel, and 4 overseas research sites) have submitted a total of 3,328 specimens to the AFIOH laboratory. Of these, 96% (n=3,193) have a completed result, with 21% (n=661) positive for an influenza virus (Graph 1): 14% influenza A; 7% influenza B. Furthermore, 3% (n=95) were positive for parainfluenza, 3% (n=94) were adenovirus, 1% (n=44) were enterovirus, 1% (n=33) were HSV, and 0.6% (n=18) were RSV (Graph 2).

MAP: Geographic coverage of DoD Influenza Surveillance*



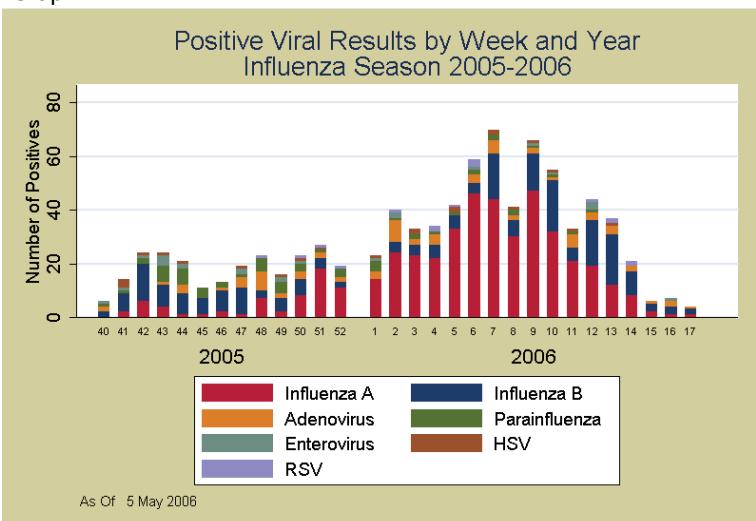
* As determined from specimen submissions. Although an entire location is highlighted, surveillance may be limited in scope

Graph 1



As Of 5 May 2006

Graph 2



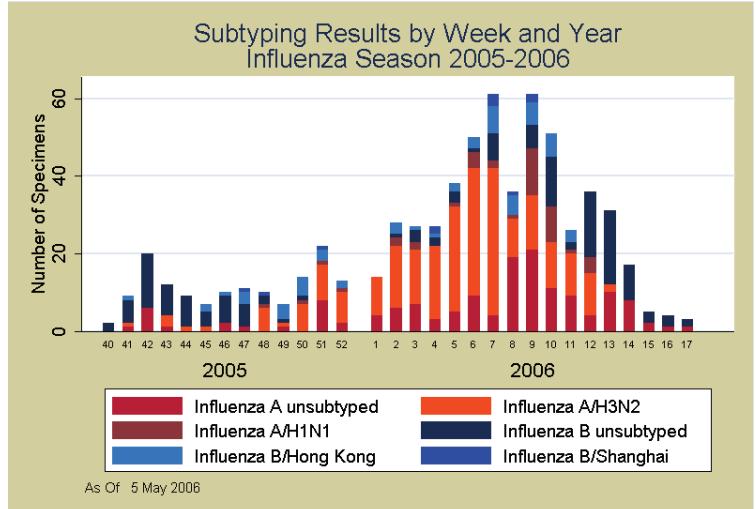
As Of 5 May 2006

Influenza Subtype and Sequence overview. All influenza isolates have been typed, and the AFIOH laboratory plans to subtype all OCONUS isolates and a portion of CONUS isolates. Of the 661 influenza isolates, 55% (n=365) have been subtyped: 254 influenza A/H3N2, 42 influenza A/H1N1, 58 influenza B/Hong Kong, and 11 influenza B/Shanghai (Graph 3).

Five (12%) of the H1N1 sub-typed isolates have been sequenced and there are notable genetic differences compared to the currently used influenza A/New Caledonia/20/99 vaccine strain.

Additionally, several H3N2 sub-typed isolates have been sequenced and appear to closely match the vaccine strain.

Graph 3



As Of 5 May 2006

The following information is gathered from the Influenza Surveillance Questionnaires submitted primarily by sentinel sites.

Vaccine Effectiveness. Vaccination status was identified in 38% (n=247) of the patients positive for influenza. Of these, 40% (n=98) were vaccinated > 2 weeks prior to infection (1 patient was vaccinated 2 days prior to infection). Isolates from these patients have been sub-typed as H3N2 (n=31), H1N1 (n=8), and B Hong Kong (n=2).

Hospital/Quarter status. Four patients positive with influenza were hospitalized (1 vaccinated patient positive for influenza B and 3 unvaccinated patients positive for influenza A). Additionally, 40 patients positive with influenza were placed on quarters (30 vaccinated patients [12 un-subtyped A, 13 A/H3N2, 1 A/H1N1, and 4 un-subtyped B] and 6 unvaccinated patients [2 un-subtyped A and 4 A/H3N2]).

Regional Influenza Activity, 02 October 2005 - Present

Table 1. Influenza by SITE and REGION

Site by REGION	Sentinel Status	Influenza A			Influenza B			Total Influenza
		Not-subtyped	H3N2	H1N1	Not-subtyped	Hong Kong	Shanghai	
OCONUS								
Asia								
121st Army, S. Korea	Sentinel		4	3				7
Osan AB, S. Korea	Sentinel		4	3				7
Andersen AFB, Guam	Sentinel	1	3		1			5
Camp Zama, Japan	Sentinel	3	19	9				31
Kadena AB, Japan	Sentinel	3	5					8
NH Okinawa, Japan	Sentinel		3					3
NH Yokosuka, Japan	Sentinel		8	2				10
Yokota AB, Japan	Sentinel	1	3	10				14
Misawa AB, Japan	Sentinel		1					1
Saipan, CMNI	Research lab		6	1				7
Europe								
Aviano AB, Italy	Sentinel		1					1
Incirklik AB, Turkey	Sentinel		2					2
Ramstein AB, Germany	Sentinel				19	2		21
RAF Lakenheath, U.K.	Sentinel	4	6		13	18		41
Deployed								
Al Udeid AB, Qatar	Sentinel	2	2	1	1			6
Ali Al Salem AB, Kuwait	Sentinel		1			1		2
Camp Arifjan, Kuwait	Sentinel		3	1				4
Camp Buehring, Kuwait	Sentinel						1	1
Central America								
CHPPM-W, Honduras	Research lab				1		3	4
South America								
NMRC-D, Peru	Research lab	21			77	21	1	120
CONUS								
East North Central								
Scott AFB, IL	Sentinel	23	19	3	4		3	52
Wright-Patterson AFB, OH	Non-Sentinel		1		1			2
East South Central								
Maxwell AFB, AL	Non-Sentinel	4	11					15
New England								
Hanscom AFB, MA	Non-Sentinel		1					1
NHC New England, CT	Sentinel		4					4
Mid Atlantic								
McGuire AFB, NJ	Sentinel	4	13			1		18
South Atlantic								
Andrews AFB, MD	Sentinel	9	6				1	16
NH Bethesda, MD	Sentinel	7	11	2	1			21
NAB Little Creek, VA	Sentinel	2	1	5	6	1		15
Shaw AFB, SC	Non-Sentinel	1	5		1			7
Mountain								
USAF Academy, CO	Sentinel	9	24		11	7		51
Buckley AFB, CO	Non-Sentinel	1		1				2
Davis-Monthan AFB, AZ	Non-Sentinel		1					1
Luke AFB, AZ	Non-Sentinel	3	3					6
Pacific								
CGS Ketchikan, AK	Sentinel		2					2
Elmendorf AFB, AK	Sentinel	1	2		1			4
NH Bremerton, WA	Sentinel	2	4					6
Tripler AMC, HI	Sentinel	2	14	1	3			20
NMC San Diego, CA	Sentinel		1					1
Travis AFB, CA	Sentinel	3						3
Edwards AFB, CA	Non-Sentinel		2		1			3
West South Central								
Barksdale AFB, LA	Non-Sentinel		1					1
Sheppard AFB, TX	Sentinel	4	15		2	3	3	27
Brooks City-Base, TX	Non-Sentinel	27	12		1			40
Goodfellow AFB, TX	Non-Sentinel		1					1
Lackland AFB, TX	Non-Sentinel	4	13		1			18
Randolph AFB, TX	Non-Sentinel		1					1
Tinker AFB, OK	Non-Sentinel	5	15		5	3		28
Total Influenza		146	254	42	150	58	11	661

Table 2. Lab Results by Area of Responsibility (AOR), Week 17 & Season Totals.

Area of Responsibility (AOR)

Note: Sentinel sites are distributed among the AOR as follows: 100% of the submitting CENTCOM and EUROCOM sites, 93% of the PACOM sites, and 31% of the NORTHCOM sites. The "OTHER" AOR category includes specimens collected from non-DoD beneficiaries from the local clinics surrounding the overseas research lab locations and are not considered sentinel sites.

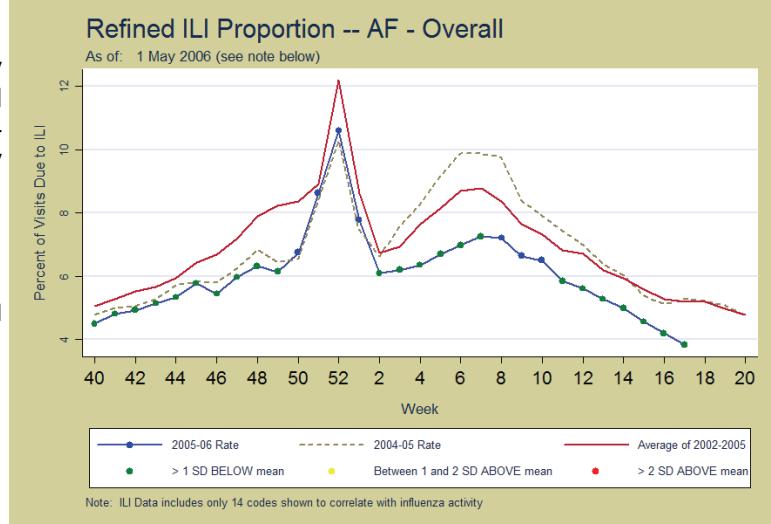
Result	Area of Responsibility										
	CENTCOM		EUROCOM		NORTHCOM		PACOM		OTHER		ALL SITES
Week	Season	Week	Season	Week	Season	Week	Season	Week	Season		
Influenza A		10		13		299	1	126		30	478
Influenza B		3		52	1	68	1	57		123	303
Adenovirus		1		7	1	50		8		28	94
Parainfluenza		1		11		38		6		39	95
Enterovirus		2		5		7		5		25	44
HSV		1		4		4		2		22	33
RSV				3		13		1		1	18
Negative		75		164		965		354		570	2128
Pending	1	1		2	23	122		8		2	135
TOTAL RECEIVED	1	94	0	261	25	1566	2	567	0	840	3328

Influenza-Like Illness (ILI)*

Overview. As of 01-May-06. Influenza-like illness (ILI) activity among Air Force MTFs is **steadily declining for Week 17**, and is 1 standard deviation (SD) below the mean. The SD is calculated weekly. It is important to note that data may vary from next week's graph.

*Influenza-like illness (ILI) activity is gathered from the Standard Ambulatory Data Registry (SADR). The data are cleaned and a summary total of ICD-9's that match a smaller, but more specific and sensitive list of ICDs than is in the ESSENCE tool, are presented (Graph 3). The Surveillance Team at AFIOH are in the process of creating a DoD-wide ILI graph.

Graph 4. ILI Activity among Air Force MTFs



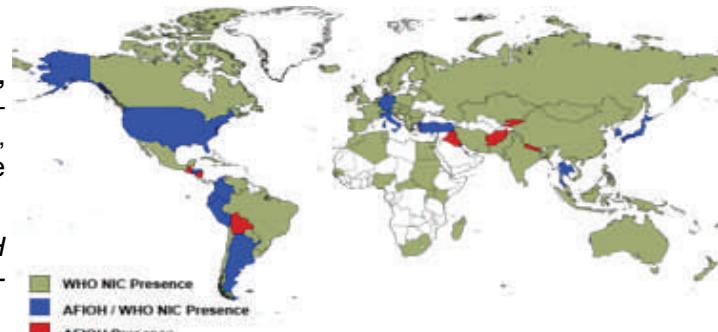
Contributions to National and Global Influenza Surveillance

It is important to note that although a country is highlighted, surveillance may be limited in scope. AFIOH provides surveillance data from 21 countries - 8 countries (Bolivia, El Salvador, Guatemala, Iraq, Kyrgyzstan, Nepal, Nicaragua, and Qatar) are not otherwise included in the current WHO network.

Note: Map describes countries submitting specimens to AFIOH and does not include all DoD contributing countries (i.e., NAMRU-2 and NAMRU-3 surveillance described on page 7).

Data Sharing

AFIOH electronically reports data to CDC using the Public Health Laboratory Information System (PHLIS). The data shared is incorporated into WHO's and CDC's influenza surveillance summaries. Additionally, data from Texas military sites are reported to the Texas Department of State Health Services (TDSHS).

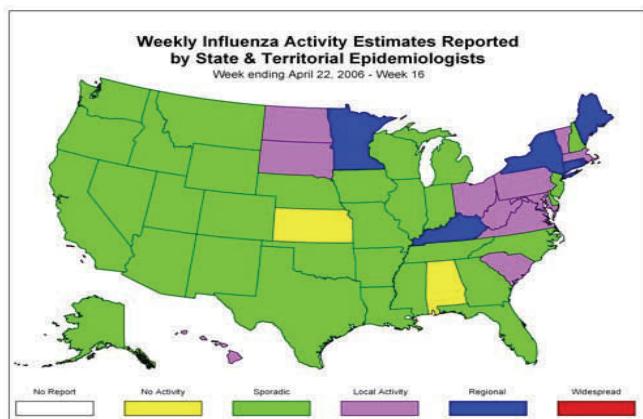


CDC / WHO Influenza Surveillance

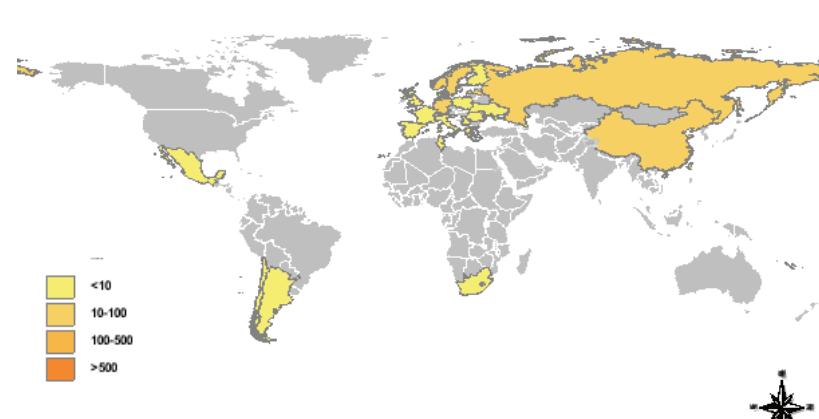
CDC reported influenza activity continuing at the same level as recent weeks during **Week 16**. Of the specimens tested during **Week 16**, 11% (n=193) were positive for an influenza virus (see CDC map below). Since 02 October 2005, a total of 12.7% (n=16,173) of specimens have tested positive for influenza in the United States.

WHO data may vary slightly from week to week. The WHO map below indicates total influenza positive specimens tested for **Week 16** (see WHO map below). Please refer to [WHO's website](#) for detailed information.

CDC U.S. Influenza Surveillance Map¹



WHO International Influenza Surveillance Map²



1. National Influenza Activity (CDC): <http://www.cdc.gov/ncidod/diseases/flu/weeklychoice.htm>

2. International Influenza Activity (WHO): <http://gamapserver.who.int/GlobalAtlas/home.asp>

Identified Influenza: AFIOH and WHO , 02 October 2005 - Present

Influenza A identified by AFIOH

(H1N1) - Identified in Asia (S. Korea, Japan, Saipan), the Middle East (Qatar, Kuwait), and North America (U.S.).

(H3N2) - Identified in Asia (S. Korea, Guam, Japan, Saipan, Kuwait), the Middle East (Kuwait), Europe (Italy, Turkey, the U.K.), and North America (United States).

WHO reported both influenza A/H3N2 and A/H1N1 viruses in the United States and Japan.

Influenza B identified by AFIOH

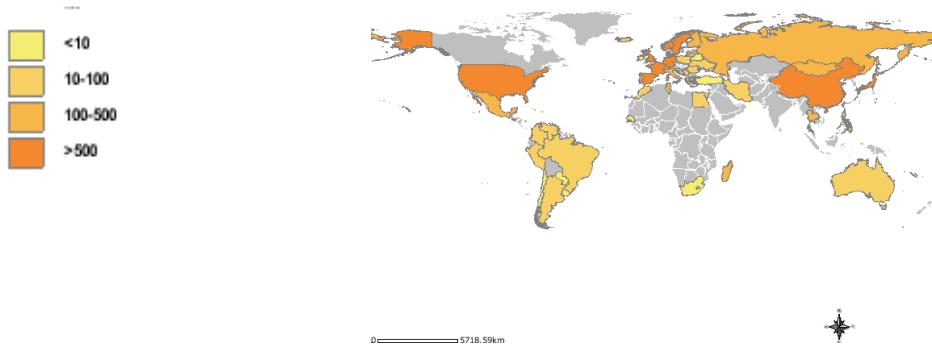
(Hong Kong) - Identified in Europe (Germany, the U.K.), the Middle East (Kuwait), South America (Peru), and North America (U. S.).

(Shanghai) - Identified in the Middle East (Kuwait), Central America (Honduras), South America (Peru), and North America (U.S.).

Although AFIOH did not detect influenza B in Japan, WHO reported influenza B isolates in Japan.

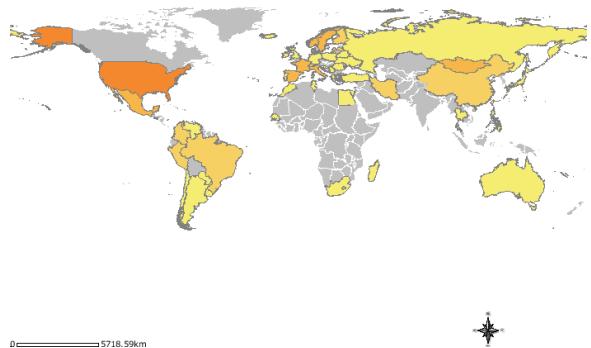
Please see WHO maps below for more information on identified isolates by country. Refer to [WHO's website](#) for detailed information.

WHO Influenza A and B, Season

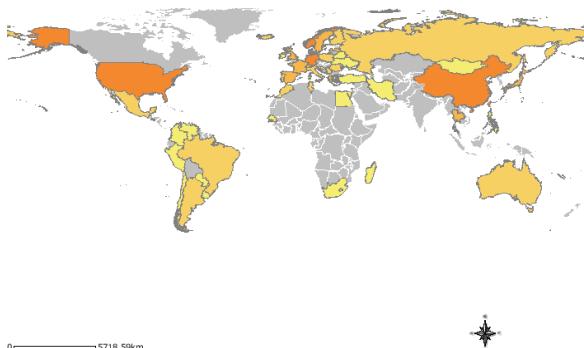


WHO Influenza A - not subtyped, Season

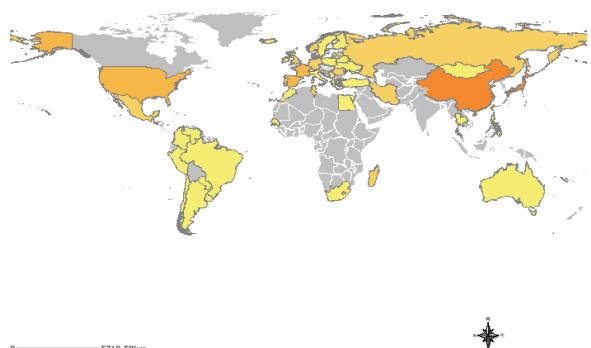
WHO Influenza B - not subtyped, Season



WHO Influenza A (H1), Season



WHO Influenza A (H3). Season



S712-524

Additional Influenza Surveillance: Army MEDCENs

The Army performs influenza surveillance at 6 Army Medical Center (MEDCEN) locations (Dwight David Eisenhower Army Medical Center [DDEAMC], Walter Reed Army Medical Center [WRAMC], Brooke Army Medical Center [BAMC], Madigan Army Medical Center [MAMC], Tripler Army Medical Center [TAMC], and Landstuhl Regional Medical Center [LRMC]), two of which are included in AFIOH's sentinel site surveillance network (see map to right). Any influenza positive specimen identified from TAMC or LRMC in the AFIOH portion of this report are also included in the "Army MEDCEN" report.



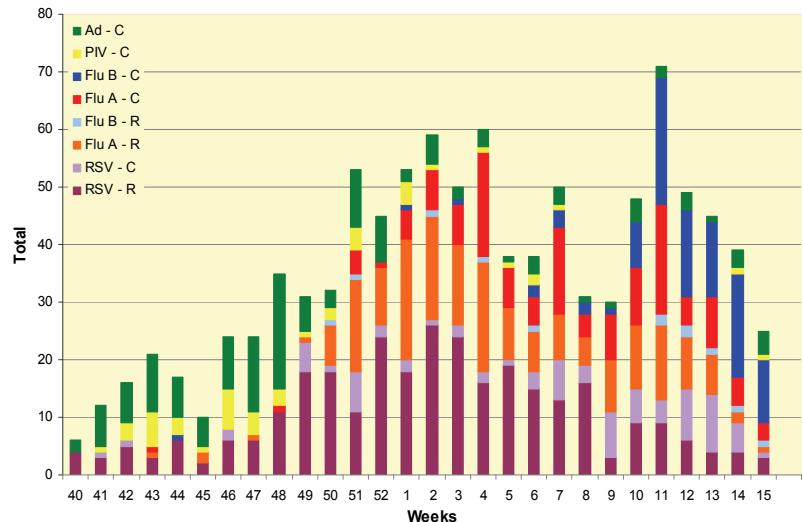
The Army MEDCEN sites are major medical centers equipped with the capability of detecting respiratory viruses, including influenza. It is important to note that the methodology varies at each site (i.e., testing procedures include direct fluorescent-antibody [DFA], various rapid antigen tests, culture, and polymerase chain reaction [PCR]) and reporting is routine, but varies from site to site (i.e., weekly, bi-weekly, monthly). The information reported and shared with AFIOH describes results from the individual MEDCENs and does not include demographic information at this time.

Graph 5. Positive Respiratory Viruses, ARMY MEDCEN*

Season overview: Since 02 October 2005, 4,700 specimens were collected and tested. Of these, 9% (n=435) were positive for an influenza virus: 7% (n=325) influenza A and 2% (n=110) influenza B. Furthermore, 8% (n=385) were positive for RSV, 1% (n=47) were parainfluenza, and 3% (n=145) were adenovirus. See Graph 5 for a season overview.

Duplicate data. At this time, 15 influenza A viruses are identified in both the AFIOH report and Army MEDCEN report. Both TAMC and LRMC send selected positive specimens to AFIOH for sub-typing. Fourteen (93%) of the influenza isolates collected from Tripler AMC have been identified as A/H3N2 and one (7%) has been identified as A/H1N1.

POC for Army MEDCEN surveillance: MAJ Wade



* C = Culture positive ; R = Rapid test positive

Avian Influenza Updates

Human Avian Influenza. 206 cases of lab-confirmed avian influenza (55% case fatality rate). The table was gathered from the [WHO website](#) on 04 May 2006 and has been updated as of 04 May 2006.

Country	2003		2004		2005		2006		Total	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Azerbaijan	0	0	0	0	0	0	8	5	8	5
Cambodia	0	0	0	0	4	4	2	2	6	6
China	0	0	0	0	8	5	10	7	18	12
Egypt	0	0	0	0	0	0	13	4	13	4
Indonesia	0	0	0	0	17	11	15	13	32	24
Iraq	0	0	0	0	0	0	2	2	2	2
Thailand	0	0	17	12	5	2	0	0	22	14
Turkey	0	0	0	0	0	0	12	4	12	4
Viet Nam	3	3	29	20	61	19	0	0	93	42
Total	3	3	46	32	95	41	62	37	206	113

Total number of cases includes number of deaths.

WHO reports only laboratory-confirmed cases.

DoD Global Influenza Surveillance Program Background

DoD-GEIS Influenza Surveillance Network

This program was established by the Global Emerging Infections Surveillance and Response System (GEIS) in 1997. The surveillance network includes the Air Force (global influenza surveillance established in 1976), the Navy (recruit adenovirus surveillance established in 1996), and the DoD overseas medical research facilities (i.e., the Naval Medical Research Unit located in Cairo, Egypt [NAMRU-3], the Naval Medical Research Unit located in Jakarta, Indonesia [NAMRU-2], the).

AFIOH Influenza Surveillance Network

In 1976, the US Air Force Medical Service began conducting routine lab-based surveillance of influenza throughout the world. Efforts were expanded when it became part of the DoD-GEIS influenza surveillance network in 1997. AFIOH manages the Air Force surveillance program that includes global influenza surveillance among DoD beneficiaries at 43 tri-service sentinel sites (including deployed locations in Iraq, Qatar, Kuwait, and Kyrgyzstan), several non-sentinel sites, two DoD overseas medical research laboratories (the Armed Forces Research Institute of Medical Sciences located in Bangkok, Thailand [AFRIMS], and the U.S. Naval Medical Research Center-Detachment [NMRC-D] located in Lima, Peru) that collect specimens from local residents in Nepal, Thailand, Argentina, Bolivia, Ecuador, Peru, and Colombia, and the US Army Center for Health Promotion and Preventive Medicine-West (CHPPM-W), that collect specimens from local residents in El Salvador, Guatemala, and Honduras.

Sentinel Site Surveillance

Sentinel site surveillance describes specimens submitted by the 43 sentinel sites using the protocol of collecting 6-10 specimens each week from patients meeting the ILI case definition (**fever $\geq 100.5^{\circ}\text{F}$ and cough or sore throat**) and completing the "Influenza Surveillance Questionnaire" (see [our website](#) to review the questionnaire and the Sentinel Site Surveillance Report). Two sentinel sites, Tripler Army Medical Center (AMC), located in Hawaii, and Landstuhl Regional Medical Center (RMC), located in Germany, send selected influenza positive specimens to AFIOH to be further characterized. These sites are major medical centers and have established laboratories capable of detecting influenza. Their involvement in the DoD-wide program is valued due to their mission and geographical location.

Processing Methods

Specimens are processed in BSL-2 conditions (BSL-3 available) and tested for influenza, parainfluenza, adenovirus, enterovirus, herpes simplex virus (HSV), and respiratory syncytial virus (RSV). Specimens are held up to 14 days before a negative result is given. All influenza isolates are typed as A or B and a portion are subtyped using hemagglutination-inhibition (HI) or polymerase chain reaction (PCR) procedures. A portion of these isolates undergo molecular sequencing.

2005-2006 Trivalent Influenza Vaccine Composition

Northern Hemisphere

- A/New Caledonia/20/99-like (H1N1)
- A/California/7/2004-like (H3N2)
- B/Shanghai/361/2002-like

2006 Southern Hemisphere

- A/New Caledonia/20/99-like (H1N1)
- A/California/7/2004-like (H3N2)*
- B/Malaysia/2506/2004

2006-2007 Trivalent Influenza Vaccine Composition

Northern Hemisphere

- A/New Caledonia/20/99-like (H1N1)
- A/Wisconsin/67/2005-like (H3N2)
- B/Malaysia/2506/2004-like

The two of the three components (influenza A [H3N2] and the influenza B components) in the WHO recommendation have changed from the current 2006-2006 vaccine components. See [WHO recommendation](#) report for more information.

*The currently used vaccine virus is A/New York/55/2004

This report was prepared on **04 May 2006**. For an expanded view of the information in this report, visit our website at <https://gumbo.brooks.af.mil/pestilence/Influenza/>. Also available on our website is a list of previous weekly surveillance reports, program information for sentinel sites (including an educational briefing and instruction pamphlets for clinic staff), and an overview of historical data.

Please visit the [DoD-GEIS website](#) for an overview of influenza surveillance at all collaborating DoD-GEIS organizations.

AFIOH Contact Information

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